



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,442	05/15/2001	Susanne Ruebel	24552	1332

7590 02/26/2004

Nath & Associates  
Sixth Floor  
1030 15th Street  
Washington, DC 20005

EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
----------	--------------

1742

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/806,442

**Applicant(s)**RUEBEL, SUSANNE *eb***Examiner**

William T. Leader

**Art Unit**

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 26-37 and 39 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 26-37 and 39 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Receipt of the response filed on 19 November 2004 is acknowledged. Claims 38 and 40-49 have been canceled. Claims 26-37 and 39 are pending.
2. Applicant's amendment to claim 37 is deemed to have overcome the rejection under 35 U.S.C. 112, first paragraph. Cancellation of claims 38, 40, 41, 47 and 48 has rendered moot the rejection of these claims under 35 U.S.C. 112, second paragraph.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

4. Claim 26-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers (4,288,298) in view of Loch (4,666,567) or Martin et al (6,071,398) for the reasons given in the previous office action and in view of the following comments.
5. Claims 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers (4,288,298) as applied to claims 26-36 above, and further in view of Laude et al (4,192,723) for the reasons given in the previous office action and in view of the following comments.

*Response to Amendment*

6. Applicant's Remarks have been carefully considered but are not deemed to be persuasive. At page 9 of the Remarks, applicant argues that the references of record do not teach or suggest applicant's inventive subject matter as a whole as recited in the rejected claims. This argument is not convincing because applicant has not pointed to any of the claimed features that are not disclosed by the references of record. As explained in the previous office action, applicant invention as recited in instant claim 26 differs from the Rogers patent only by reciting the use of pulse-plating in which the percentage pulse duration is at least 50%. Applicant's specification describes pulse plating broadly, and notes that unipolar or bipolar pulses may be employed (paragraph [013]). As pointed out previously, Rogers discloses that a variable power supply 50 is provided to supply electroplating current. Switches 51 permit polarity reversal of the anode and cathode so that reverse plating may be performed (column 6, lines 28-35). Thus, Rogers discloses plating using pulses of current which reverse in polarity when switch 512 is activated. This falls within the scope of pulse-plating as recited in claim 26. Rogers is silent as to the percentage of pulse duration. As explained in the previous office action, both Loch and Martin et al disclose pulse duration falling within the range of at least 50% as presently claimed. Thus, the subject matter as a whole is taught by the applied prior art.

7. At page 12 of the Remarks, applicant argues that Rogers does not disclose pulse-plating. This argument is not considered to be correct. As noted, Rogers discloses the use of reverse current plating. This type of plating involves the alternate application of positive and negative currents to the workpiece. Applicant's specification indicates that bipolar pulse plating is within the scope of the claims. Thus, Rogers does disclose pulse-plating as recited in instant claim 26. Electrical waveforms illustrative of periodic reverse current plating are shown in figure 11 of the article "Better deposits at greater speeds by P R Plating" by George Jernstedt, of record. Figure 11 shows a sequence in which a pulse of one polarity is followed by a pulse of another polarity.

8. Applicant further argues that no teaching or suggestion in these references which would lead the ordinary skilled artisan to modify the references to derive the subject matter as defined in the claims. This argument is not persuasive. As noted above, Rogers discloses reverse current plating, a form of pulse-plating which falls within the scope of applicant's claims, but does not give details of the percentage pulse duration. Clearly, some pulse duration was used. By not giving any specific details, Rogers suggests that the choice of values of this parameter is within the skill of the ordinary practitioner in the art. This is shown to be the case by the secondary references which disclose the use of pulse-plating, and further disclose values of percentage pulse duration falling within the range recited by applicant.

Both references disclose advantages from the use of controlled pulse plating. Loch teaches that the process allows rapid processing of the substrates and optimizing deposit thickness uniformity, maximizing plating rate, and minimizing deposit burning tendencies (column 2, line 66 - column 3, line 2; column 3, lines 23-27). The voltage control provides improved mass transfer and diffusion of the plating ions during processing (column 5, lines 64-67). The process of Martin et al improves the surface uniformity, appearance, grain structure and leveling of the deposit.

Additionally, the overall deposition rate is increased and processing times are reduced, thereby yielding higher production output (column 2, lines 4-8). The advantages recognized by the secondary references provide motivation for the use of pulse-plating with process parameters recited by applicant in in electrochemical deposition processes such as the process of Rogers.

9. At page 14 applicant observes that the present application claims priority to October 2, 1998, while Martin et al was published on June 6, 2000. Applicant concludes that Martin is not a valid reference against the present application. This point is not well-taken. The effective date of the Martin et al patent as a reference against the instant claims is the October 6, 1997 filing date. This date is before the earliest priority date asserted by applicant.

10. Applicant's arguments with respect to claims 37 and 39 are similar to those advanced with respect to claims 26-36 and are not found to be persuasive for the same reasons. At page 19 of the Remarks, applicant argues that Laude et al are concerned with the use of the gold sulphite bath in electroplating and not with the manufacture of 3-dimensional objects by electroforming. The Laude et al patent is not relied on in the rejection to teach the manufacture of 3-dimensional objects. This is taught by Rogers. Laude et al is relied on to show that it is known in the art of electrochemical deposition that gold sulfite baths are advantageous compared to gold cyanide baths for reasons of safety (column 1, lines 46-50). The increased safety resulting from the use of a gold sulfite bath in place of the cyanide bath provides the motivation to utilize a sulfite bath in the process of Rogers.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

Art Unit: 1742

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W

William Leader  
February 18, 2004

ROY KING *R King*  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700